Class 7
Exercises

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Chapter 12 Exercise 3

- A monopolist can produce at a constant average (and marginal) cost of AC = MC = \$5. It faces a market demand curve given by $Q = 53 - P$.
- **a.** Calculate the profit-maximizing price and quantity for this monopolist. Also calculate its profits.
- **b.** Suppose a second firm enters the market. Let $Q1$ be the output of the first firm and $Q2$ be the output of the second. Market demand is now given by
  $Q1 + Q2 = 53 - P$
- Assuming that this second firm has the same costs as the first, write the profits of each firm as functions of $Q1$ and $Q2$.
- **c.** Suppose (as in the Cournot model) that each firm chooses its profit-maximizing level of output on the assumption that its competitor's output is fixed. Find each firm's "reaction curve" (i.e., the rule that gives its desired output in terms of its competitor's output).
- **d.** Calculate the Cournot equilibrium (i.e., the values of $Q1$ and $Q2$ for which each firm is doing as well as it can given its competitor's output). What are the resulting market price and profits of each firm?
- ***e.** Suppose there are N firms in the industry, all with the same constant marginal cost, MC = \$5. Find the Cournot equilibrium. How much will each firm produce, what will be the market price, and how much profit will each firm earn? Also, show that as N becomes large, the market price approaches the price that would prevail under perfect competition.

Exercise 2 (not in book)

- Assume there are 10 identical producers of textiles. Each firm produces with marginal costs of 2 Euros and without fixed costs. The market demand function is given by $P = 12 - 0.1Q$, where the price is given in Euros and the quantity in kilograms.
- a. The firms are initially price competition à la Bertrand. What is the market price and the total quantity produced?
- b. The firms now consider forming a cartel. What are the cartel prices, the quantity per firm and the total quantity?
- c. If cartel profits are divided equally among cartel members, what will be the profit per firm?
- d. Assume that one firm decides not to respect the collusive agreement and offers a price 10 cents below the cartel price. Assume that the other firms stick to the cartel price, what would be the profit of a firm that chooses to deviate from the cartel agreement?